BAR CODE MEDICATION ADMINISTRATION (BCMA)

TECHNICAL MANUAL/SECURITY GUIDE

Version 3.0
February 2004

(Revised August 2006)

Department of Veterans Affairs
VistA Health Systems Design & Development

Revision History

Each time this manual is updated, the Title Page lists the new revised date and this page describes the changes. If the Revised Pages column lists "All," replace the existing manual with the reissued manual. If the Revised Pages column lists individual entries (e.g., 25, 32), either update the existing manual with the Change Pages Document or print the entire new manual.

Date	Revised Pages	Patch Number	Description
08/2006	6-7, 9, 13	PSB*3*13	− Increased the total for the BCMA V. 3.0. routines to 68. (p.6) − Updated the "BCMA V. 3.0 Routines Installed onto VistA Server" example to include the following routine: PSBO XA. (p. 7) − Updated Manager Menu [PSB MGR] options list to include Missing Dose Followup (correction) and Unknown Action Status Report (new with this patch). (p. 9) − Added description of the "Unknown Actions" mail group parameter. (p. 13) (R. Singer, PM; M. Newman, Tech Writer)
08/2006	iv, 6, C1-C10	PSB*3*2	**Note**: The functionality listed below will be activated with the release of PSB*3*2. − Updated Table of Contents to include new Appendix C. (p. iv) − Added reference to new Unit Dose label printing functionality and Appendix C. (p. 6) − Added Appendix C: Interfacing with the Bar Code Label Printer. (p. C1-C10) (R. Singer, PM; M. Newman, Tech Writer)
12/2005	6-7	PSB*3*16	− Increased the total for the BCMA V. 3.0. routines to 67. (p.6) − Updated the "BCMA V. 3.0 Routines Installed onto VistA Server" example to include the following routines: PSBCSUTL, PSBCSUTX, PSBCSUTY. (p. 7) (R. Singer, PM; M. Newman, Tech Writer)
01/2005	6-7, 14, 20-21	PSB*3*4	− Increased the total for the BCMA V. 3.0. routines to 64. (p.6) − Updated the "BCMA V. 3.0 Routines Installed on to VistA Server" example to include the PSBOPF routine. (p. 7). − Added description for new PSB READ ONLY security key. (p.14) − Added new Glossary entries for PSB READ ONLY and Read-Only BCMA. (p. 20-21) (R. Singer, PM; M. Newman, Tech Writer)
10/2004	6-7	PSB*3*3	– Increased the total for the BCMA V. 3.0 routines to 63. (p. 6) – Updated the "BCMA V. 3.0 Routines Installed on to VistA Server" example to reflect the inclusion of routines PSBML2, PSBML3, and PSBMLLKU to the VistA Server. (p. 7) (R. Singer, PM; M. Newman, Tech Writer)
02/2004			Original Released BCMA V. 3.0 Technical Manual/Security Guide (R. Singer, PM; M. Pospisil, Tech Writer)

Table of Contents

Table of Contents

Implementation and Maintenance

Minimum Required Packages

Before installing BCMA V. 3.0, make sure that your system includes the following Department of Veterans Affairs (VA) software packages and versions (those listed or higher).

Example: Minimum Required Packages and Versions

Package	Minimum Version Needed
Inpatient Medications	5.0
Kernel	8.0
MailMan	8.0
Nursing	4.0
Order Entry/Results Reporting	3.0
Pharmacy Data Management	1.0
RPC Broker (32-bit)	1.1
Toolkit	7.3
VA FileMan	22.0
Vitals/Measurements	5.0

Installation Time Estimates

IMPORTANT:

You should install and test BCMA in your test accounts *before* installing in your production accounts.

On average, it takes approximately two minutes to install BCMA V. 3.0. This estimate was provided by a few of our BCMA V. 3.0 Beta Test sites. Actual times may vary, depending on how your site is using its' system resources.

Suggested time to install: non-peak requirement hours. During the install process, PC Client users should not be accessing the Client Software.

Implementation and Maintenance

Resource Requirements

This section summarizes the (approximate) number of resources required to install BCMA V. 3.0.

- Routines   68
- Globals   1 (^PSB)
- Files   5 (53.66-53.79)
- ^PSB Size   Unit Dose = 300 x # of Medications
  (in bytes)   Administered
                      IV = 2100 x # of IV Bags
                      Administered
- FTEE Support   .2
- FTEE Maintenance   .2

Response Time Monitor

BCMA V. 3.0 does not include Response Time Monitor hooks.

Laptops and Bar Code Scanners

The approximate requirements for laptops and bar code scanners depend on the number of Inpatient areas, at your site, that use BCMA V. 3.0 for administering active medication orders. The BCMA Development Team recommends that your site have a minimum of three laptops and three scanners for each ward.

Printers

Your site should provide printers for creating patient wristbands and medication bar code labels, and for handling Missing Dose Requests sent from BCMA V. 3.0 to the Pharmacy.

Unit Dose Label Printer Devices

BCMA V. 3.0 includes the *Label Print* [PSBO BL] option for printing individual or batch Unit Dose bar code labels. This option allows sites the flexibility to use any printer that has bar code printing capabilities to produce BCMA bar code labels. Routine PSBOBL uses site-specific printers or terminals to produce labels. See Appendix C: "Interfacing with the Bar Code Label Printer" for detailed setup information.

IV Label Printer Devices

Inpatient Medications V. 5.0 provides a menu option for printing individual or batch IV bar code labels. See the section "Interfacing with the Bar Code Label Printer" in the *Inpatient Medications V. 5.0 Technical Manual/Security Guide* for detailed setup information.

Implementation and Maintenance

Files Required to Run BCMA V. 3.0

BCMA V. 3.0 uses the following files installed on the VistA Server. "Journaling" is recommended.

- ^PSB (53.66,   BCMA IV Parameters
- ^PSB (53.68,   BCMA Missing Dose Request
- ^PSB (53.69,   BCMA Report Request
- ^PSB (53.78,   BCMA Medication Variance Log
- ^PSB (53.79,   BCMA Medication Log

Note: You can learn more about these files by generating a list with file attributes using VA FileMan.

Routines Installed

Review the listing below to learn the routines installed on to your site's VistA Server during the installation of BCMA V. 3.0. The first line of each routine briefly describes its general function.
Note: You can use the *Kernel First Line Routine Print* [XU FIRST LINE PRINT] option to print a list containing the first line of each PSB routine.

Routine Mapping

At this time, we do *not* offer any recommendations for routine mapping. However, if you choose to map the BCMA V. 3.0 package routines, you will need to bring your system down, and then restart it to load the new routines into memory.

Example: BCMA V. 3.0 Routines Installed onto VistA Server

```
PSBALL      PSBAPIPM    PSBCHIVH    PSBCHKIV    PSBCSUTL    PSBCSUTX
PSBCSUTY    PSBMD       PSBML       PSBML1      PSBML2      PSBML3
PSBMLEN     PSBMLEN1    PSBMLHS     PSBMLLKU    PSBMLTS     PSBMLU
PSBMLVAL    PSBO        PSBO1       PSBOAL      PSBOBL      PSBODL
PSBODL1     PSBODO      PSBOHDR     PSBOMD      PSBOMH      PSBOMH1
PSBOMH2     PSBOML      PSBOMM      PSBOMV      PSBOPE      PSBOPF
PSBOPI      PSBOPM      PSBOVT      PSBOWA      PSBOXA      PSBPAR
PSBPARIV    PSBPOIV     PSBPRN      PSBRPC      PSBRPC1     PSBRPC2
PSBRPC3     PSBRPCMO    PSBRPCXM    PSBSAGG     PSBSVHL7    PSBUTL
PSBVAR      PSBVDLIV    PSBVDLPA    PSBVDLPB    PSBVDLTB    PSBVDLU1
PSBVDLU2    PSBVDLU3    PSBVDLUD    PSBVDLVL    PSBVITFL    PSBVT
PSBVT1      PSBXMRG
     68 routines
```

Exported Options

BCMA CHUI Menus

BCMA V. 3.0 exports three main menus. They include those listed below, in the CHUI version of BCMA V. 3.0. The options for each menu are listed in this section.

- **Manager Menu:** [PSB MGR] is assigned to managers
- **Pharmacist Menu:** [PSB PHARMACY] is assigned to all inpatient Pharmacists
- **Nurse Menu:** [PSB NURSE] is assigned to all clinicans and other personnel who administer active medication orders

Manager Menu [PSB MGR]

This menu includes the following options:

- Drug File Inquiry
- Medication Administration Menu Nursing
  - ➢ Medication Administration Log Report
  - ➢ Missed Medications Report
  - ➢ Ward Administration Times Report
  - ➢ Due List Report
  - ➢ PRN Effectiveness List Report
  - ➢ Enter PRN Effectiveness
  - ➢ Manual Medication Entry
  - ➢ Medication Administration History (MAH) Report
  - ➢ Missing Dose Request
  - ➢ Medication Variance Log
  - ➢ Drug File Inquiry
- Medication Administration Menu Pharmacy
  - ➢ Medication Administration Log Report
  - ➢ Missed Medications Report
  - ➢ Due List Report
  - ➢ Medication Administration History (MAH) Report
  - ➢ Missing Dose Request
  - ➢ Missing Dose Followup
  - ➢ Missing Dose Report
  - ➢ Label Print
  - ➢ Drug File Inquiry
- Missing Dose Followup
- Reset User Parameters
- Trouble Shoot Med Log
- Unknown Action Status Report

Exported Options

BCMA CHUI Menus (cont.)

**Pharmacy Medication Administration Menu
[PSB PHARMACY]**

This menu includes the following options:

- Medication Administration Log Report
- Missed Medications Report
- Due List Report
- Medication Administration History (MAH) Report
- Missing Dose Request
- Missing Dose Followup
- Missing Dose Report
- Label Print
- Drug File Inquiry

**Nursing Medication Administration Menu
[PSB NURSE]**

This menu includes the following options:

- Medication Administration Log Report
- Missed Medications Report
- Ward Administration Times Report
- Due List Report
- PRN Effectiveness List Report
- Enter PRN Effectiveness
- Manual Medication Entry
- Medication Administration History (MAH) Report
- Missing Dose Request
- Medication Variance Log
- Drug File Inquiry

Security Features

Defining Mail Groups in BCMA

In BCMA V. 3.0, you can define two "Mail Groups" for notifying Pharmacy, IRM, and other internal staff about errors and Missing Dose Requests. This section describes how you can create mail groups, and the purpose of each group.

Creating Mail Groups for BCMA V. 3.0

Creating mail groups for BCMA V. 3.0 involves using the VistA Mail Group *Enter/Edit* [XMUSER] option to set the TYPE field to PUBLIC. Once this task is accomplished, you can then use the Parameters Tab of the GUI BCMA Site Parameters application to define the mail groups that you created.

Mail Group Types in BCMA V. 3.0

This section describes the mail groups that you can define using the Parameters Tab of the GUI BCMA Site Parameters application.

- **Due List Error:** Generates an E-mail message for any medication order that BCMA V. 3.0 cannot resolve for the BCMA VDL placement, and sends it to the mail group members. An example might include no administration times entered for a Continuous order.

- **Missing Dose Notification:** Generates an E-mail message for any Missing Dose Request entered using the BCMA V. 3.0 CHUI or GUI menu options. The E-mail is sent to all members of the mail group, specifically Pharmacy, as a "fail safe" even if the designated Missing Dose printer is not functioning.

- **Unknown Actions:** This field generates an E-mail message for any administration with an "Unknown" status while processing administrations to display on the VDL.

Security Features

Assigning Menus to Users

Use this section to assign menus to BCMA V. 3.0 CHUI and GUI users, if they have not already been assigned.

CHUI Version

Refer to this section for BCMA V. 3.0 CHUI menu assignments.

- **PSB MGR:** assign to a manager
- **PSB PHARMACY:** assign to all Inpatient Pharmacists
- **PSB NURSE:** assign to all clinicians and other personnel who administer active medication orders

GUI Version

Refer to this section for BCMA V. 3.0 GUI menu assignments.

- **PSB GUI CONTEXT – USER:** assign to all clinicians and other personnel who administer active medication orders

Allocating Security Keys to Users

Refer to this section to allocate the following security keys to appropriate site personnel.

- **PSB MANAGER:** designates the holder as a manager
- **PSB INSTRUCTOR:** designates the holder as a nursing instructor supervising student nurses
- **PSB STUDENT:** designates the holder as a student nurse, requiring that an instructor also sign on to BCMA V. 3.0 at the same time
- **PSB CPRS MED BUTTON:** designates the holder as a nurse who can document administered verbal- and phone-type STAT and NOW (One-Time) orders using the CPRS Med Order Button on the BCMA VDL
- **PSB READ ONLY:** designates the holder as a user that only has Read-Only access to BCMA. Note that users with Read-Only access will also be required to have the PSB GUI CONTEXT – USER secondary menu option.

Establishing Electronic Signature Codes

You may establish Electronic Signatures Codes using the Kernel *Electronic Signature code Edit* [XUSESIG] option.
Note: For easier access by all users, this option is tied to the Common Options, under the *User's Toolbox* [XUSERTOOLS] submenu.

Appendix C: Interfacing with the Bar Code Label Printer

Introduction

The Bar Code Medication Administration (BCMA) Medication package includes an interface between the *Label Print* [PSBO BL] option and the bar code label printer. The *Label Print* [PSBO BL] option currently prints Unit Dose labels on a label printer. This interface allows a unique bar code to be printed on the first line of the Unit Dose label.

Since users can now customize their own label formats using control codes, it is important to note that all Unit Dose and Ward Stock medication labels must conform to the JCAHO Standard for Medication Labeling (Standard MM.4.30). Please refer to the excerpt of the standard and references at the end of this Appendix.

Any printer that supports bar code printing can be used for the Unit Dose labels. However, the scan success rate will probably be lower if anything other than direct thermal transfer on synthetic labels is used. Labels from dot matrix printers, laser printers, or even bar code printers using other types of transfer, wipe off more easily. The label could become unreadable, especially in areas where the bag might become wet. With a direct thermal transfer onto a synthetic label, the print actually bonds to the label material. Essentially, the label would have to be ripped to damage the print.

Hardware Setup

The printer must be physically connected to the network and then defined in the DEVICE (#3.5) and TERMINAL TYPE (#3.2) files.

Software Setup

The type of printer will determine the next step. The Zebra and Intermec printers require control codes, where the dot matrix or laser printers do not require these codes. The Unit Does print routine checks the existence of the control codes before attempting to execute. It is not required for all control codes to be defined; just build the necessary control codes for the selected printer.

When setting up the Terminal Type file for the Zebra bar code printer device, the Terminal Type file entry must contains the word "ZEBRA" as part of the file name.
For example: P-ZEBRA

When setting up the Terminal Type file for the Intermec bar code printer device, the Terminal Type file entry must contains the word "INTERMEC" as part of the file name.
For example: P-INTERMEC

Appendix C: Interfacing with the Bar Code Label Printer

Software Setup (cont'd)

The printer must be physically connected to the network and then defined in the DEVICE (#3.5) and TERMINAL TYPE (#3.2) files.

Printer Control Codes

For this type of printer to print a unique bar code on the Unit Dose labels, IRMs must build control codes. The CONTROL CODES fields [#55] are added to the TERMINAL TYPE file (#3.2) in the Kernel patch XU*8*205. **This patch must be installed before proceeding**.

Control Code Set Up

The Unit Dose label print routine currently uses printer control codes and code names that are built within FileMan. The following table illustrates the control codes and corresponding names for the Zebra printer.

Example: Zebra Printer Terminal Type Control Codes

Abbreviation	Full Name	Control Code
ET	End Text	N/A
ETF	End Text Field	N/A
EB	End Barcode	W !,"^FO20,150^A0N,30,20^CI13^FR^FD"_TEXT_"^FS"
EBF	End Barcode Field	N/A
EL	End Label	W !,"^XZ"
FE	Format End	N/A
FI	Format Initialization	N/A
FI1	Format Initialization 1	N/A
FI2	Format Initialization 2	N/A
SB	Start Barcode	S PSBTYPE=$S(PSBSYM="I25":"B2N",PSBSYM="128":"BCN",1:"B3N") S:PSBSYM="" PSBBAR="NO-CODE" W !,"^BY2,3.0^FO20,100^"_PSBTYPE_",N,80,Y,N^FR^FD"_PSBBAR_"^FS"
SBF	Start Barcode Field	N/A
SL	Start Label	W !,"^XA",!,"^LH0,0^FS"
ST	Start Text	W !,"^FO"_PSBTYPE_"^A0N,30,20^CI13^FR^FD"_TEXT_"^FS"
STF	Start Text Field	S PSBTYPE=$S(PSBTLE="PSBDRUG":"20,25",PSBTLE="PSBDOSE":"20,60", PSBTLE="PSBNAME":"350,60",PSBTLE="PSBWARD":"350,90", PSBTLE="PSBLOT":"350,120", PSBTLE="PSBEXP":"350,150", PSBTLE="PSBMFG":"500,150", PSBTLE="PSBFCB":"350,180",1:"0,0")

Appendix C: Interfacing with the Bar Code Label Printer

Software Setup (cont'd)

The field position map below identifies the specific control codes for the Zebra printer that direct the exact position in which the fields are printed on the bar code label.

Example: Zebra Bar Code Label - Field Position Map

Abbreviation	Control Code (Field Coordinates)	Description
EB	FO20,150	"No – Code" statement
SB	FO20,100 "	Bar code Graph
STF	PSBTLE="PSBDRUG":"20,25"	Drug Name
	PSBTLE="PSBDOSE":"20,60",	Dosage
	PSBTLE="PSBNAME":"350,60"	Patient Name and Quality
	PSBTLE="PSBWARD":"350,90",	Ward Location
	PSBTLE="PSBLOT":"350,120",	Lot Number
	PSBTLE="PSBEXP":"350,150",	Expiration Date
	PSBTLE="PSBMFG":"500,150",	Manufacturer
	PSBTLE="PSBFCB":"350,180"	Filled By/Checked By

Appendix C: Interfacing with the Bar Code Label Printer

Software Setup (cont'd)

The following table illustrates the control codes and corresponding names for the Intermec printer.

Example: Intermec Printer Terminal Type Control Codes

Abbreviation	Full Name	Control Code
ET	End Text	N/A
ETF	End Text Field	N/A
EB	End Barcode	W "<STX>H8;o50,40;f3;c7;h2;w2;d0,80;<ETX>",!
EBF	End Barcode Field	N/A
EL	End Label	W "<STX><ETB><ETX>",!
FE	Format End	N/A
FI	Format Initialization	W "<STX><ESC>C<ETX>",!,"<STX><ESC>P<ETX>",!,"<STX>E2;F2<ESC><ETX>",!
FI1	Format Initialization 1	W "<STX>H7;o30,260;f3;c7;h2;w2;d0,80;<ETX>",!,"<STX>H6;o50,440;f3;c7;h2;w2;d0,20;<ETX>",!,"<STX>H5;o50,260;f3;c7;h2;w2;d0,20;<ETX>",!,"<STX>H4;o70,260;f3;c7;h2;w2;d0,20;<ETX>",!
FI2	Format Initialization 2	W "<STX>H3;o90,260;f3;c7;h2;w2;d0,20;<ETX>",!,"<STX>H2;o110,260;f3;c7;h2;w2;d0,20;<ETX>",!,"<STX>H1;o110,40;f3;c7;h2;w2;d0,20;<ETX>",!,"<STX>H0;o130,40;f3;c7;h2;w2;d0,40;<ETX>",!
SB	Start Barcode	W "<STX>"_TEXT_"<ETX>",!
SBF	Start Barcode Field	S PSBTYPE=$S(PSBSYM="I25":"c2,0",PSBSYM="128":"c6,0",1:"c0,0") W "<STX>B8;o85,40;f3;"_PSBTYPE_";i1;do,25;p@;<ETX>",!,"<STX>I8;h1;w1;<ETX>",!
SL	Start Label	W "<STX>R;<EXT>",!,"<STX><ESC>E2<EXT>",!
ST	Start Text	W "<STX>"_TEXT_"<CR><ETX>",!
STF	Start Text Field	N/A

Appendix C: Interfacing with the Bar Code Label Printer

Software Setup (cont'd)

The field position map below identifies the specific control codes for the Intermec printer that direct the exact position in which the fields are printed on the bar code label.

Example: Intermec Bar Code Label - Field Position Map

Abbreviation	Control Code (Field Coordinates)	Description
EB	<STX>H8;o50,40;f3;c7;h2;w2;d0,80;<ETX>	"No – Code" statement
FI1	<STX>H7;o30,260;f3;c7;h2;w2;d0,80;<ETX>	Filled By/Checked By
	<STX>H6;o50,440;f3;c7;h2;w2;d0,20;<ETX>"	Manufacturer
	<STX>H5;o50,260;f3;c7;h2;w2;d0,20;<ETX>	Expiration Date
	<STX>H4;o70,260;f3;c7;h2;w2;d0,20;<ETX>	Lot Number
FI2	<STX>H3;o90,260;f3;c7;h2;w2;d0,20;<ETX>	Ward Location
	<STX>H2;o110,260;f3;c7;h2;w2;d0,20;<ETX>	Patient Name and Quality
	<STX>H1;o110,40;f3;c7;h2;w2;d0,20;<ETX>	Dosage
	<STX>H0;o130,40;f3;c7;h2;w2;d0,40;<ETX>	Drug Name
SBF	<STX>B8;o85,40;f3;"_PSBTYPE_";i1;do,25;p@;<ETX> <STX>I8;h1;w1;<ETX>"	Bar code Graph

Appendix C: Interfacing with the Bar Code Label Printer

Software Setup (cont'd)

Example Terminal Type Files

The following are examples of terminal type file setups that were used in the development process. These examples are provided to guide the user in the setup process. Please note that they are only examples, and may not be appropriate for your configuration.

Example: Zebra Printer Sample Terminal Type File

```
NUMBER: 1                                  ABBREVIATION: SL
  FULL NAME: Star Label                    CONTROL CODE: W !,"^XA",!,"^LH0,0^FS"
NUMBER: 2                                  ABBREVIATION: EL
  FULL NAME: End Label             CONTROL CODE: W !,"^XZ"
NUMBER: 3                                  ABBREVIATION: SB
  FULL NAME: Start Barcode
  CONTROL CODE: S PSBTYPE=$S(PSBSYM="I25":"B2N",PSBSYM="128":"BCN",1:"B3N")
S:PSBSYM="" PSBBAR="NO-CODE"  W
!,"^BY2,3.0^FO20,100^"_PSBTYPE_",N,80,Y,N^FR^FD"_PSBBAR_"^FS"
NUMBER: 4                                  ABBREVIATION: EB
  FULL NAME: End Barcode
  CONTROL CODE: W !,"^FO20,150^A0N,30,20^CI13^FR^FD"_TEXT_"^FS"
NUMBER: 5                                  ABBREVIATION: ST
  FULL NAME: Start Text
  CONTROL CODE: W !,"^FO"_PSBTYPE_"^A0N,30,20^CI13^FR^FD"_TEXT_"^FS"
NUMBER: 6                                  ABBREVIATION: STF
  FULL NAME: Start Text Field
  CONTROL CODE: S
PSBTYPE=$S(PSBTLE="PSBDRUG":"20,25",PSBTLE="PSBDOSE":"20,60",
PSBTLE="PSBNAME":"350,60",PSBTLE="PSBWARD":"350,90",
PSBTLE="PSBLOT":"350,120", PSBTLE="PSBEXP":"350,150",
PSBTLE="PSBMFG":"500,150", PSBTLE="PSBFCB":"350,180",1:"0,0")
```

Appendix C: Interfacing with the Bar Code Label Printer

Software Setup (cont'd)

The following shows a sample Intermec printer terminal type file.

Example: Intermec Printer Sample Terminal Type File

```
NUMBER: 1                                    ABBREVIATION: SL
  FULL NAME: Start Label
  CONTROL CODE: W "<STX>R;<EXT>",!,"<STX><ESC>E2<EXT>",!
NUMBER: 2                                    ABBREVIATION: EL
  FULL NAME: End Label             CONTROL CODE: W "<STX><ETB><ETX>",!
NUMBER: 3                                    ABBREVIATION: FI1
  FULL NAME: Format Initialization 1
  CONTROL CODE: W
"<STX>H7;o30,260;f3;c7;h2;w2;d0,80;<ETX>",!,"<STX>H6;o50,440;f3;c7;h2;w2;d0,2
0;<ETX>",!,"<STX>H5;o50,260;f3;c7;h2;w2;d0,20;<ETX>",!,"<STX>H4;o70,260;f3;c7
;h2;w2;d0,20;<ETX>",!
NUMBER: 4                                    ABBREVIATION: FI2
  FULL NAME: Format Initialization 2
  CONTROL CODE: W
"<STX>H3;o90,260;f3;c7;h2;w2;d0,20;<ETX>",!,"<STX>H2;o110,260;f3;c7;h2;w2;d0,
20;<ETX>",!,"<STX>H1;o110,40;f3;c7;h2;w2;d0,20;<ETX>",!,"<STX>H0;o130,40;f3;c
7;h2;w2;d0,40;<ETX>",!
NUMBER: 5                                    ABBREVIATION: SBF
  FULL NAME: Start Barcode Field
  CONTROL CODE: S
PSBTYPE=$S(PSBSYM="I25":"c2,0",PSBSYM="128":"c6,0",1:"c0,0") W
"<STX>B8;o85,40;f3;"_PSBTYPE_";i1;do,25;p@;<ETX>",!,"<STX>I8;h1;w1;<ETX>",!
NUMBER: 6                                    ABBREVIATION: SB
  FULL NAME: Start Barcode            CONTROL CODE: W
"<STX>"_TEXT_"<ETX>",!
NUMBER: 7                                    ABBREVIATION: EB
  FULL NAME: End Barcode
  CONTROL CODE: W "<STX>H8;o50,40;f3;c7;h2;w2;d0,80;<ETX>",!
NUMBER: 8                                    ABBREVIATION: FI
  FULL NAME: Format Initialization
  CONTROL CODE: W
"<STX><ESC>C<ETX>",!,"<STX><ESC>P<ETX>",!,"<STX>E2;F2<ESC><ETX>",!
NUMBER: 9                                    ABBREVIATION: ST
  FULL NAME: Start Text
  CONTROL CODE: W "<STX>"_TEXT_"<CR><ETX>",!
```

Appendix C: Interfacing with the Bar Code Label Printer

Software Setup (cont'd)

Dot Matrix and Laser Printers

The control codes in the TERMINAL TYPE file (#3.2) are not required for dot matrix and laser printers. However, the BAR CODE ON field [#60] and BAR CODE OFF field [#61] in the TERMINAL TYPE file (#3.2) are needed.

An example of each field is shown below for the Output Technology Corporation (OTC) printers. Please note that it is only an example and may not may not be appropriate for your configuration.

Example: OTC Printer Example

```
BAR CODE OFF: $C(27),"[0t",!
BAR CODE ON:  $C(27),"[4;4;0;2;4;2;4;2}",$C(27),"[3t"
```

Appendix C: Interfacing with the Bar Code Label Printer

Printed Bar Code Unit Dose Label Sample

With this interface, a unique bar code will be printed on the first line of the Unit Dose label with the label number printed below it. Depending upon the type of printer used, the asterisks (*) may or may not be printed on either side of the label number.

Example: Sample Unit Dose Bar Code Label

```
Drug: BACLOFEN 10MG TABS (Qty: 1)
Dosage: 25MG          Patient: BCMAPATIENT,ONE
                      Ward: GEN MED
                      Lot: 123141
 ‖‖‖‖‖‖‖‖‖‖‖           Exp: 4/5/2006  Mfg: UPJOHN
                      Filled/Checked By: XX/XX
*500-2564*
```

Example: Sample Ward Stock Bar Code Label

```
Drug: BACLOFEN 10MG TABS (Qty: 1)
Dosage: 25MG          Patient:
                      Ward:
                      Lot: 123141
 ‖‖‖‖‖‖‖‖‖‖‖           Exp: 4/5/2006  Mfg: UPJOHN
                      Filled/Checked By:_____/_____
*500-2564*
```

Appendix C: Interfacing with the Bar Code Label Printer

JCAHO Standard for Medication Labeling*

The following is an excerpt from the *The Comprehensive Accreditation Manual for Hospitals: The Official Handbook (CAMH)* that lists the JCAHO standard for medication labeling. All printed medication labels must adhere to this standard.

Standard MM.4.30
Medications are labeled.

Rationale for MM.4.30
A standardized method for labeling all medications will minimize errors.

Elements of Performance for MM.4.30
1. Medications are labeled in a standardized manner according to law or regulation and standards of practice.
2. Any time one or more medications or solutions are prepared but are not administered immediately, the medication container* must be labeled.
3. At a minimum, all medications prepared in the hospital are labeled with the following:

   - Drug name, strength, amount (if not apparent from the container)
   - Expiration date† when not used within 24 hours
   - Expiration time when expiration occurs in less than 24 hours
   - The date prepared and the diluent for all compounded IV admixtures and parenteral nutrition solutions
4. When preparing individualized medications for multiple specific patients, or when the person preparing the individualized medications is not the person administering the medication, the label also includes the following:

   - Patient name
   - Patient location
   - Directions for use and any applicable cautionary statements either on the label or attached as an accessory label (for example, "requires refrigeration," "for IM use only")

---

*Source: Joint Commission on Accreditation of Hospital Organizations (JCAHO). (January, 2006). *The Comprehensive Accreditation Manual for Hospitals: The Official Handbook (CAMH)*
(pp. MM-11-MM-12). Oakbrook Terrace, Il: Joint Commission Resources, Inc. Web link:
http://vaww.oqp.med.va.gov/oqp_services/accreditation/uploads/JCAHO2006/2006%20CAMH%20Core.pdf